

5.12 HUMAN HEALTH AND SAFETY HAZARDS

5.12.1 Affected Environment

The following section addresses current human health and safety hazards such as the use and storage of hazardous materials and wastes at Main Post, SBER, WAAF, and the proposed SRAA. The section addresses specific Army regulations pertaining to the use and storage of hazardous materials and wastes and wildfire management, in addition to the regulations discussed in Chapter 3.12 and Appendix N of this document. The site-specific Proposed Action areas in Main Post, SBER, WAAF, and the SRAA do not accumulate high concentrations of biomedical waste, so this waste stream is not addressed.

Hazardous Materials and Waste Management

The Army maintains updated material safety data sheets for all hazardous materials used at SBMR and WAAF. The Transfer Accumulation Point at SBER Building 6040 stores hazardous materials and wastes used and generated at Main Post, SBER, and WAAF.

Schofield Barracks Military Reservation

SBMR maintains site-specific spill prevention, control, and countermeasure plans for all fuel storage and delivery facilities, vehicle and equipment maintenance facilities, building and grounds maintenance facilities, and hazardous materials and waste storage areas. The plans cover the following specific facilities:

- Army and Air Force Exchange Stations (AAFES) filling stations;
- Super Station centralized, industrial filling station;
- Schofield-SBER TAP;
- Motor pools/tactical equipment maintenance facilities;
- Individual motor pools/tactical maintenance facilities;
- 536th Support maintenance shop, automotive section and 536th Engineers (7th Maintenance BN, 45th Support Group);
- Director of Logistics Maintenance Division, USAGHI Vehicle and Armament Repair;
- DPW Area Engineer Equipment Pool;
- Directorate of Logistics (DOL) Maintenance Shop 6;
- Minor facilities with heating oil tanks;
- Backup generators at many cantonment area buildings;
- Minor facilities with gasoline/diesel fuel tanks; and
- Minor facilities with POL and hazardous materials storage.

Wheeler Army Airfield

WAAF maintains site-specific spill prevention, control, and countermeasure plans for the following facilities:

- BDE hot fuel point;
- E Company 214th Aviation(AVN) maintenance facility;
- A, B, C, D Company aircraft maintenance facilities;
- H Company aircraft maintenance facility;
- DOL jet petroleum (JP)-4 fuel storage facility;
- 25 ID AVN BDE JP-4 storage facility;
- 5th Squadron, 9th Cavalry, 25th aviation maintenance facility;
- 4/25 AVN Regiment aviation maintenance facility;
- 4/25 AVNBDE tactical equipment maintenance shop; and
- HHC, 25 ID AVN BDE tactical equipment maintenance shop.

Specific Health and Safety Hazards

The following sections address specific human health and safety hazards of concern, such as hazardous materials and wastes, that may be used, stored, or transported within the SBMR, WAAF, and the SRAA. Hazardous materials and wastes can affect the environment and often have specific regulations that govern their use, storage, and disposal.

Ammunition

Four designated ammunition holding areas (AHA) on SBMR are used as temporary storage by the training units; these are shown in bold print on Table 5-32. At completion of training, unused ammunition is returned to the ASP, located on WAAF in buildings 1538 and 1551. The Naval Magazines at Lualualei resupplies ammunition to WAAF (Belt Collins 1993, IV-27). These buildings act as permanent ordnance storage for all of USAG-HI (Borja 2002a). Permanent ammunition storage is not authorized on SBMR.

Explosives quantity distance regulations (TM 9-1300-206) are imposed on ammunition storage facilities for the safety of personnel and supplies. All explosives and ammunition storage is conducted within the ASP on WAAF under the supervision of the US Army Support Command, Hawai'i DOL. For safety reasons, 105mm artillery propellant is reduced from charge 5 to charge 3 prior to transportation from the WAAF ammunition supply point to an SBMR artillery range ammunition transfer point. A visual check of propellant charges is conducted at that point before the ammunition and propellant are delivered to the guns (Belt Collins 1993, IV-27). The unused propellant may be burned at one designated burn pit north of Area X. An area 50 feet (15.2 meters) downwind of the burn pit is kept clear of personnel to minimize exposure to fumes from the burn pit (Belt Collins 1993, IV-27).

Residues from burned propellant are the only hazardous wastes temporarily stored at the range burn site in a designated HWSSP. When the HWSSP reaches capacity, it is brought to the 90-day TAP facility on SBER, pending disposal by the DRMO-HI.

Table 5-32
Ranges and Ordnance on Schofield Barracks Military Reservation

RANGE	AUTHORIZED USE AND AMMUNITION	FIRING POINTS
Grenade House	Hand grenades (HE, Smoke, Practice), Pistols 9mm, .22, .38, .45 Cal., 5.56mm., 7.62mm Match round. M203 40mm TP, Demolition Effect Simulators (DES), 5.56mm SRTA.	6 rooms
Military Operations in Urban Terrain Assault Course	5.56mm, M-203 40mm TP, Pistols 9mm, .22, .38, .45 Cal., DES, 5.56 SRTA.	5 mockups
KR-3 ATP	Ammunition Transfer Point.	
KR-1A	Hand Grenade Combat Practice. M-228 Training Fuse Grenades	7 stations
KR-5 Infantry Battle Course	5.56mm, 7.62mm, M-203 40mm TP, Pistols 9mm, .22, .38, .45 Cal., 7.62mm Sniper, Claymore, Bangalore, Grenades HE/Smoke CS/HC, Dragon IIE M222, AT-4, TOW (inert), JAVELIN (inert), DES. 7.62mm Door gunnery, Aerial gunnery 20mm, 60/81mm SRTA, 5.56mm SRTA. AHA #3 is located on the south-southeast edge of this site.	Scenario Required
IBC Trench	5.56/7.62mm, 5.56mm SRTA, 9mm, .45, .38, .22 Cal., M-203 40mm TP, Grenades, DES, 60/81mm SRTA (Scenario Req.).	5 bunkers
IBC Village	5.56mm, 7.62mm, Pistols 9mm, .45, .38, .22 Cal., M-203 40mm TP, Grenades, DES, 5.56mm SRTA (Scenario Req.).	5 bldg
KR-6 Squad Defense Course	5.56/7.62mm, 40mm TP, Claymore, Pistols 9mm, .22, .38, .45 Cal., DES, 60/81mm SRTA (1 firing point). 5.56mm/.50 Cal. SRTA.	5
Combat Pistol Range (CPR)	Pistols Qualification/Familiarization. 9mm, .22, .38, .45 Cal.	10
KR-8	Qualification/ Familiarization. M-73, M-74, M-202 (Flash), MK-172, AT-4, Inert SMAW, MK-19 (M-918 TP), Powder Burn Site (2 burning pans).	2 LAW/AT-4 2 MK-19
KR-9	Qualification/Familiarization. M-79, M-203 40mm HE/TP/ SMK/ILLUM.	4
CR-1	Automated Record Fire, NBC, and Night Fire. 5.56mm Rifle, 60/81mm SRTA (1 firing point).	9
CR-2	Automated Field Fire, NBC Fire. 5.56mm Rifle, 60/81mm SRTA (1 firing point), .50 Cal. SRTA (3 Points). Record Fire/Field Fire.	10
CR-2A	25 Meter Zero. 5.56mm, 7.62mm, Pistols 9mm, .22, .38, .40, .45 Cal., Shotgun, Rod & Gun Club Small arms.	15
CR-3	25 Meter Zero. 5.56mm, 7.62mm Rifle, .50 Cal SRTA (10 Meter Zero/Qual).	65
MF-2	Multi-Purpose. Machine-Gun. FAM/QUAL. 5.56mm 7.62mm, (7.62mm Sniper Match round), 50 Cal. Qual. (Lanes 1-4) and OH58D static or running, 60/81mm SRTA (1 firing point), -.50 Cal. SRTA (10 Meter Zero/Qual).	7 -50 Cal/4 Pos Helo- 1 lane
MF-2 Engineer Demolition	Engineer Demo. Block, Shape, Crater Charges. (Demolition up to 300 pounds [136 kilograms] maximum).	1
MF-3	Record Fire. 5.56mm Rifle.	18
MF-4	Zero. 5.56mm Rifle, .50 Cal. DRTA (10 Meter Zero/Qual).	60
MF-5 CPR	Pistols 9mm to .45 Cal.	10 LNS
Ambush Site # 1	5.56mm, 7.62mm, Claymores, M203 40mm TP, Pistols 9mm, .22, .38, .45 Cal. DES (Scenario Required).	
Pointman Course #1	5.56mm, Pistols 9mm, .22, .38, .45 Cal., Shotgun, 5.56mm SRTA (Scenario Required).	7
Ambush Site # 2	5.56mm, Claymore, Pistols 9mm, .22, .38, .45 Cal., M-203 40mm TP, DES, 5.56mm SRTA (Scenario Required).	

Table 5-32
Ranges and Ordnance on Schofield Barracks Military Reservation *(continued)*

RANGE	AUTHORIZED USE AND AMMUNITION	FIRING POINTS
Grenade House	Hand Grenades (HE, Smoke, Practice), Pistols 9mm, .22, .38, .45 Cal., 5.56mm, 7.62mm Match round. M203 40mm TP, DES, 5.56mm SRTA.	6 rooms
Pointman Course #2	5.56mm. Pistols 9mm-1, .22, .38, .45 Cal. Shotgun, 5.56mm SRTA (Scenario Required).	6
MF-5 Engineer Demo	Shape, Cratering Charge (up to 1.50 pounds [.68 kilograms] maximum), Bangalore (No Target), M19/M21 Mines.	1 Pit Area
Convoy Ambush	5.56mm. 7.62mm. Pistols 9mm.1, .22, .38, .45 Cal. M-203 40mm TP. Claymore Mine. DES, 5.56mm SRTA.	1 Lane
Infantry Demolition	Infantry Demo. Fragmentation Grenades, Claymore. (Demolition up to 1 pound [.45 kilogram] maximum per pit) AHA #4 is located on the southern edge.	3 pits
FP-101	Artillery Indirect Fire. 105mm maximum charge 3 only.	
FP-102	Artillery Indirect Fire. 105mm maximum charge 3 only.	
FP-103	Artillery Indirect Fire. 105mm maximum charge 3 only.	
FP-104	Artillery Indirect Fire. 105mm maximum charge 3 only.	
FP-Halo	Artillery Indirect Fire. 105mm maximum charge 3 only.	
FP-202 (Dry)	Artillery Indirect Fire. Dry Training only. AHA #2 is located on the northern most edge.	
FP-207	Mortar Indirect Fire. 60mm Handheld, and Base Plate Mortar.	
FP-210	Mortar Indirect Fire. 81mm Mortar.	
FP-211	Artillery and Mortar Indirect Fire. 105mm maximum (charge 3 only), 81mm Mortar.	
FP-212	Artillery Indirect Fire. 105mm maximum (charge 3 only).	
FP-213 AVS	Ammunition Verification Site.	
FP-216	Mortar Indirect Fire. 60mm/81MM Mortar.	
FP-217	Mortar Indirect Fire. 60mm/81MM Mortar.	
FP-303	Artillery Indirect Fire. 105mm maximum (charge 3 only). (Firing Point on Left side of Road.) AHA#1 located immediately south of this site.	
FP-304	Artillery Indirect Fire. 105mm/155mm maximum (charge 3 only). (Firing Point on Left side of Road.)	
FP-306	Artillery Indirect Fire. 105mm/155mm maximum (charge 3 only).	
FP-307	Artillery Indirect Fire. 105mm/155mm maximum (charge 3 only).	
FP-308	Artillery Indirect Fire. 105mm/155mm maximum (charge 3 only). Laser: OH58D (All, in and out by Air only).	
Skeet Range	Rod and Gun Range. Shotguns.	2 lanes
CATM (US Air Force Range)	Small Arms Range. Shotguns, Pistols 9mm, .22, .38, .45 Cal. 5.56mm.	21
Collective Training Facility CTF MOUT	Small arms blank ammunition. 5.56mm SRTA on 2 buildings, 9mm Paint Bullet (Static Targets, Force on Force), 60/81mm SRTA (1 firing point).	18 buildings.
OP X-Ray	Laser: AN/GVS-5, G/VLLD, AIM-1EXL.	1 Position
OP Tiger	Laser: AN/GVS-5, LTD, G/VLLD, AIM-1EXL.	1 Position
OP Kolekole	Laser: LTD, G/VLLD, AN/GVS-5, AN/PAQ-3.	1 Position

Source: Borja 2002a.

Range KR-8, listed on Table 5-32 in bold print, is the burn site for SBMR. The site was selected and constructed in accordance with Section 17-5, Department of Army Pamphlet 385-64, Ammunition and Explosive Safety Standards. The burn site is operated under the following restrictions (Table 5-33):

- All burn sites have a means of collecting remnants produced by the burning operation;
- Propellants to be burned are unconfined and spread evenly over the burn pan. The depth of the propellant would not exceed 3 inches (7.62 centimeters); and
- A burn pan would be used only once per 24-hour period.

Surface danger zones are associated with live ammunition firing at range training facilities. SBMR's surface danger zones exist roughly within an arc formed by Area X (the eastern boundary), Trimble Road (the southern boundary), and the Wai'anae Mountain Range as the western boundary. The direction of fire is generally west to north. The area supports small arms, mortar, and artillery training. No live tube-launched, optically tracked, wire-guided missile, air-to-ground, or ground-to-air firing is conducted at SBMR ranges (Belt Collins 1993, IV-27). In the past two years, there have been no problems involving the public and the storage, transportation, and use of ammunition for training at SBMR (Borja 2002b).

Table 5-33
Burn Site Specifications

Burn Site	Estimated Amount of Lbs./burn	Estimated Frequency of Burns/Week	Type of Propellants	Burn-Pan Dimensions	Pan Quantity
SBMR	100-200	1	M1, M8, M9, M10	5'9 "x8'10"x33"	2 units

Source: US Army 1999

Results from recent range soil sampling revealed metal, explosives, and SVOC levels above EPA Region IX residential and industrial PRGs on SBMR. Although metals such as aluminum and iron occur naturally in Hawaiian soils, byproducts of munitions, such as lead and RDX, contribute contaminants that could affect health and safety impacts to the natural environment. Section 5.8, Water Resources, and Section 5.9, Geology, Soils, and Seismology, provide a more detailed discussion of investigation results and effects on surface water and soils. (The investigation study is provided in Appendix M1.)

No live-fire exercises occur at SBER, and no surface danger zones exist because the range is used for bivouac, maneuver, and dummy fire training activities (US Army 1993, IV-27). Exercises at SBER use pyrotechnics and blank ammunition. The last training incident involving the public occurred approximately three years ago at the northwest end of SBER. Smoke from a smoke grenade blew into the Wahiawā community, and some children had to be examined at a hospital (Borja 2002b).

No live-fire areas exist at WAAF. The airfield has an ammunition storage point with an established explosive safety quantity-distance arc (Belt Collins 1994, 4-73 to 4-74). The safety arc around the ammunition storage point is in the south-central portion of the installation.

Table 5-32 lists all SBMR ranges, how each range is used, what type of ammunition is used on each range, and what the respective firing points are for each range. Figure 5-44 shows the layout of SBMR with the ranges and ammunition holding areas identified.

Installation Restoration Program Sites

SBMR was placed on the National Priorities List in 1990, primarily as a result of elevated TCE levels discovered in four wells supplying potable water. TCE levels in the wells exceeded the health advisory level of 2.8 parts per billion (ppb) established by the HDOH and the federal limit of 5.0 ppb (although the 5.0 ppb EPA federal limit was not established until 1987) (Belt Collins 1993, IV-21). Since 1986, air strippers at the pump station have been in operation to remove TCE from water extracted from the contaminated wells prior to its use in the distribution system. According to DOH, TCE levels in the treated water have been reduced to below regulatory thresholds (US Army 1994, 17). In August 2000 SBMR was taken off the National Priorities List (Blandford 2002).

Effective March 15, 1993, the Deputy Assistant Secretary of the Air Force (Environment, Safety, and Occupational Health) and the Deputy Assistant Secretary of the Army (Installations and Housing) exchanged WAAF (formerly US Air Force) for Fort Kamehameha Military Reservation, Hawai'i (formerly US Army) (USARHAW 2002c). The Air Force was responsible for cleaning up the Wheeler IRP sites until 2000, at which time the responsibility was turned over to the Army (Fukuda 2002). Appendices K-2 and K-3 discuss the SBMR and WAAF IRP sites in further detail.

In addition to the IRP sites at SBMR and WAAF, a Superfund site lies outside the installation boundaries on land owned by Campbell Estates and leased to the Del Monte Corporation (Figure 5-45). In November 1998, Del Monte completed the Superfund Remedial Investigation. Del Monte has also completed a Baseline Human Health Risk Assessment (May 2000), an Addendum to the Remedial Investigation Report (April 5, 2002), and a Phytoremediation Treatability Study (May 9, 2002). Based on these investigations, in September 2003, the EPA issued a ROD establishing certain remedial actions to clean up the Superfund site south of SBMR. These investigations also confirmed that the parcel north of SBMR did not pose a threat to human health or the environment, and the parcel was removed from the list on January 13, 2004 (USEPA 2004).

Lead

The properties of, and regulations for, lead are described in detail in Section 3.12 of this document. Lead survey information for SBMR and WAAF is maintained on the DPW lead and asbestos database.

[Figure 5-44](#)

Ordnance Range Locations at Schofield Barracks Main Post

[Figure 5-45](#)

Approximate Location of the Del Monte Superfund Site

Asbestos

The properties of, and regulations for, asbestos are described in detail in Section 3.12 of this document. Current asbestos survey information for the SBMR/SBER/WAAF/South Range installation is maintained on the DPW lead and asbestos database.

Polychlorinated Biphenyls

Efforts are ongoing to assess and remediate possible PCB contamination sources throughout SBMR (including WAAF and SBER). A survey to determine the concentration of PCBs in the electrical distribution equipment on military installations in Hawai'i was conducted in 1991. The survey phase of this project included the collection and analysis of dielectric fluid and recorded pertinent data from approximately 1,500 pieces of electrical equipment (Power Systems Analysis 1991, 9-10). The study revealed that there were PCB-containing transformers and electrical equipment throughout SBMR.

Devices at SBMR that are found to contain regulated levels of PCB are being removed and upgraded with non-PCB devices, or are being retrofilled or removed, drained, packaged, and disposed of in accordance with 40 CFR Part 761 (PRC 1995, 4).

The OU3 IRP investigation, further discussed in the IRP section, addressed PCB contamination at the pest control shop, car care center, acid pits, trenches and pits, maintenance areas, motor pools, and storage areas on SBMR.

As previously stated, waste products that are deemed hazardous are placed into 55-gallon (208-liter) containers, collected from the generating sites, and retained at the DOL operating transfer accumulation point for no more than 90 days. The materials are removed by a contractor for recycling. In general, old electrical transformers that may contain PCBs are expeditiously processed for disposal but still require storage for short periods (Belt Collins 1993, IV-18).

Electromagnetic Fields

The general public typically is not allowed in areas that could contain EMF hazards from Army equipment. Equipment producing EMF that could pose a serious health risk is operated under strict constraints, in site-approved areas, and by qualified personnel (Moreno 2002). Mobile radar equipment is owned by Division Artillery and consists of a radar-set designed to detect incoming artillery and projectiles. It is operated and managed by the Forward Area Defense section.

The Schofield Barracks Real Property Master Plan identifies a military-affiliated radio station (MARS) on SBMR (Belt Collins 1993, IV-28). It is in the vicinity of the Range Control facility and produces EMF that could pose a serious health risk. Signs warning of hazards from electromagnetic radiation to personnel are posted around the perimeter of the cleared antenna field. No official radiation studies appear to have been performed that could confirm the adequacy of this clear zone. Some satellite terminals producing EMF that could pose a serious health risk are on the western side of Kunia Road, south of the Kunia Tunnel entrance (Moreno 2002).

There are two Remote Automated Weather Systems (RAWS) on SBMR and one RAWS on SBER. The RAWS, typically in remote wildland areas on installations, requires personnel to be on-site only for maintenance and not for operations.

The WAAF Real Property Master Plan identifies the majority of emitting equipment at WAAF as low-powered, very high frequency, or ultra high frequency (Belt Collins 1994, 4-88). Ground control radar is operated by Air Traffic Control at the airfield (Moreno 2002). This equipment produces EMF that could potentially pose a serious health risk.

Petroleum, Oils, and Lubricants

A federal facility agreement (FFA) was signed by the US Army, the USEPA, and the HDOH establishing four Operable Units (OUs) to investigate potentially contaminated sites in the Main Post and SBER. Chemicals contained in petroleum hydrocarbons, oil and grease, solvents, battery fluids, pesticides, and PCBs were the primary potential constituents of concern that were targeted for analysis in samples collected in the OU3 investigations (Uribe & Associates 1996, 2-8). The remedial investigation activities conducted at the OU3 sites included surface geophysics, shallow and deep soil-gas sampling, surface soil sampling, deeper soil sampling, surface water sampling, or sediment sampling. The results of the investigation indicated that no current or potential threat to human health or the environment exists at OU3, and no remedial action is necessary. The car care center (also known as the Auto Hobby Center) adjacent to the AAFES filling station, motor pools, and maintenance areas on SBMR were all included in this study.

Underground Storage Tanks

Most industrial operations use the “Super Station” centralized motor pool southwest of Lyman Road at Building 2805 on SBMR. All fuel for industrial use is transported from the HAFB Fuel Farm via Tesoro and stored in ASTs at the Super Station (Akasaki 2002a).

Two AAFES retail filling stations are located on SBMR at buildings 80 and 1167. Each distributes different grades of unleaded gasoline, with diesel fuel sold at the first station. These tanks are listed along with other existing and historical USTs in Appendix K-4.

There are eighteen motor pools at SBMR. The primary function of these facilities is vehicle maintenance. Although motor fuels were previously stored and distributed at these motor pools for military vehicles, all fueling for industrial purposes now takes place at the Super Station. Most of these motor pool facilities have a designated waste storage/holding area for shop and vehicle servicing wastes. Normally, the waste products are temporarily collected at a far corner of each motor pool, which is surrounded with sandbags for leak containment and cordoned with barbed wire (Belt Collins 1993, IV-18). The waste is separated into hazardous waste, such as lithium batteries or RCRA chemicals, and non-regulated waste, such as recyclable oil. The hazardous waste is brought to the HWSSP, while the recyclable materials are brought to the Recyclable Material Shop Storage Point (RMSSP) (Akasaki 2002a).

Prior to 1970, military personnel at WAAF used an extensive underground fuel storage and distribution system disseminating from the Waikakalaua Fuel Storage Annex (FSA) at the southern tip of WAAF. The FSA held over 1.7 million gallons (6.4 million liters) of fuel and distributed aviation gas and automotive gas to additional fuel storage points on WAAF. The system was largely abandoned in 1972 and was taken out of service completely in 1994. The large storage tanks at the FSA are in place but not used. Satellite storage tanks connected to the system are largely removed (USACE 2001b, 51).

All in use and permanently out of use USTs and leaking underground storage tanks (LUSTs) at SBMR and WAAF are listed in Appendix K-4. Additionally, this table provides the facility, site location, responsible party, construction, maximum capacity, content, inspection, and remediation status information for all LUSTs.

Aboveground Storage Tanks

Many USTs are being upgraded to ASTs. Appendix K-4 lists location, capacity, and content information for all ASTs at SBMR and WAAF. This table also provides containment and leak protection information.

The Super Station uses four ASTs. Additionally, ASTs are used by many buildings on base to store liquid petroleum gas (LPG), also known as propane, to fuel hot water heaters. Some motor pools use ASTs to store diesel fuel or used oil in conjunction with vehicle maintenance.

Several ASTs located on WAAF in the area of the aircraft runway contain diesel or aviation gas (AVGAS). The Hot Fuel Point is located at the east end of the airfield, near the baseball diamonds. Although this facility is technically not a permanent fuel point and is designed to be mobile, it is used as an ongoing hot fueling station for helicopters of the 25th Aviation Brigade. The entire fuel system is above ground. Two ASTs located on WAAF are used to store chlorine and hydrogen peroxide, respectively. These tanks are located in the Schofield Wastewater Treatment Plant and are maintained by DPW. The hydrogen peroxide AST is currently not in use.

Emergency generators are located throughout the Main Post, SBER, and WAAF. Many of these units contain integrated tanks to store fuel as opposed to being connected to separate ASTs. A separate list of these units is maintained by the DPW (McGinnis 2002).

Oil-Water Separators, Wash Racks, and Grease Traps

The DPW maintains a list of all OWSs, grease traps, and wash racks on SBMR. This list is provided in Appendix K-4, with location and inspection information. Facilities are inspected regularly by the USAG-HI Environmental Compliance Office (ECO), and DPW is responsible for maintenance of these devices (McGinnis 2002).

Pesticides/Herbicides

Various types of pesticides, including insecticides, herbicides, fungicides, avicides (bird poison), and rodenticides, have been used at SBMR to maintain the grounds and structures, and prevent pest-related health problems. An entomologist oversees the pest management

program, maintains pesticide inventories, approves pesticide application procedures, and reviews pesticide use documents. Since the mid-1980s, the Land Management Branch has subcontracted pesticide application for the installation.

Pesticides and herbicides are primarily stored in four locations on SBMR, as follows (Yamamoto 2002):

- The Pest Control Shop (Building 2628) is on Kolekole Avenue in the DPW building complex, is properly signed, is kept locked, and is equipped with a ventilation fan. The pest control shop does not have any floor drains and has concrete secondary containment;
- The SBER Environmental Shop (Building 1595) is on Santos Dumont Avenue. Less than seven gallons (less than 26.5 liters) of pesticides are maintained by the natural resources program at this facility;
- Pesticides for Kalākaua Golf Course, on the corner of Humphrey Road and Kolekole Avenue, are stored in Building 2101. The storage area is kept locked. The floor of the caged area is concrete and has concrete secondary containment; and
- The pesticides for Leilehua Golf Course are stored in a ventilated, outdoor hazardous materials locker by the Golf Course Maintenance Facility (Building 6028) on SBER. The locker is kept locked except when accessing product. The locker provides for secondary spill containment, and is equipped with lights and a ventilation fan.

Additionally, glyphosate (trade name Roundup) is stored in the G3 Range Maintenance Facility (Building 1125A) at the intersection of Beaver Road and O'ahu Street.

Pesticides and herbicides are also sold and distributed at the Family Housing Self-Help store (located south of Kolekole Avenue on the Kalākaua Golf Course in Building 2104), the AAFES (located just inside Foote Gate on Kolekole Avenue in Building 80), the commissary (located on the northeast corner of Trimble Road and Glennan Street), and the Veterinary Treatment Facility (located in Building 936, off Lyman Road just beyond the Super Station). All pesticides and herbicides sold on the base are registered by the USEPA for general use; restricted use products are not sold. Some of the products sold and distributed on base include small consumer-size packages of bait stations for ant and cockroach control, glue traps for cockroach and mouse control, snap traps for mouse and rat control, and aerosol insecticide for crawling and flying insect control. A spill cleanup kit is on hand in the retail locations and store personnel are familiar with the use of the cleanup kit and with installation spill contingency procedures. Contractors are not allowed to store pesticides on base (Yamamoto 2002).

Appendix K-5 provides a list of all pesticides and herbicides stored and used on base, some of which are also used on other USAG-HI installations but are stored only at SBMR.

Wildfires

There is a high fire danger at some SBMR ranges because the rugged terrain limits accessibility for fire suppression (USARHAW and 25th ID[L] 2001a, 632 and 675-676). Fires are most common east of the fire access road. Highly flammable plants are particularly abundant throughout the moist habitat areas, especially below 3,000 feet (914.4 meters). Tracer rounds, pyrotechnics, and indirect fire such as illumination rounds are the most common ignition sources, and most wildland fires originate in the ordnance impact area.

Two RAWs on SBMR aid in determining weather conditions and the threat of wildfires. Figure 5-46 shows the location of fire management facilities and a future dip pond for northern SBMR. The Schofield Fire Station was constructed in 1924 and has three inadequately sized vehicle bays and limited sleeping accommodations (Belt Collins 1993). SBMR has two commercial pumpers and two military field firefighting vehicles.

Chapter 7 of the IWFMP describes the SBMR fire management area (USARHAW and 25th ID[L] 2003, 7-81). A fire history was compiled for Schofield Barracks to the extent possible. There were frequent gaps in important information, particularly in the number of acres burned and the ignition source. According to *Wildland Fire Risk and Management on West and South Ranges Schofield Barracks, O'ahu*, recent record keeping has been kept current (Beavers et al. 2002a). Based on available data, approximately 90, 110, and 130 fires were identified at SBMR in 1998, 1999, and 2000, respectively.

Fire at Schofield Barracks has been frequent in the past decade due in large part to the installation being extensively used (USARHAW and 25th ID[L] 2003, 7-81). Additionally, most types of ammunition, including highly flammable munitions (such as white phosphorous and tracers) are authorized for use. Few fires have burned outside of the firebreak road, indicating that it is a substantial barrier to the spread of fire. Between 1993 and March 2001, eight fires were identified outside of the fire break (Beavers et al. 2002a).

The total number of fires per month illustrates that the end of the summer requires the greatest fire management vigilance, though there is also a fairly high incidence in March, April, and May (USARHAW and 25th ID[L] 2003, 7-81). Most fires were ignited between 11:00 AM and 3:00 PM. The median fire size is 0.5 acre (0.2 hectare). During the time when the extent of acres burned was recorded, only a fraction of the fires were larger than 10 acres, and the largest fire on record was 300 acres (121 hectares).

The greatest number of fires have been ignited at MF-2, in the impact area, and at KR-5 (USARHAW and 25th ID[L] 2003, 7-81). These three locations were responsible for almost half of all fires. The most significant cause of ignitions at Schofield Barracks has been tracers, which account for just over 50 percent of all recorded fires.

[**Figure 5-46**](#)

Fire Management Facilities at Schofield Barracks Main Post

Three wildfire areas have been designated based on existing and planned firebreaks and roads (USARHAW and 25th ID[L] 2003, 7-84 and 7-85). The cantonment area was not included. Each area was assigned an ignition potential, fuels hazard, and habitat value based on the best currently available information. As a result, the impact area has a moderately high wildfire prevention priority. The south range and northern and western SBMR have a moderate wildfire prevention priority.

Fire protection in the fire management area includes firebreaks and fuels modification (USARHAW and 25th ID[L] 2003, 7-87). There is one existing firebreak at SBMR and two more are planned. The existing break surrounds the ordnance impact area and has been in place for many years. Where necessary, it will be upgraded to standard. The first proposed firebreak will surround the MF ranges and will connect to firing point 308. Two alternatives are being studied at this time. One or both of them will be constructed, depending on feasibility, defensibility, and funding. The second proposed firebreak will contain the south range and will use existing roads, which will be improved to firebreak standards. Prescribed burning has been conducted in the past and will continue in the future, primarily within the ordnance impact area. Mechanical, hand, and chemical treatments are in use and are planned for all of the firebreaks.

Schofield Barracks Range Control is responsible for retrieving weather data from the Schofield RAWS located at Range CR-1 (USARHAW and 25th ID[L] 2003, SBMR-10, and SBMR-26). The burn index, as determined by the fire danger rating system, will be used to rank fire danger to determine restrictions on pyrotechnic use, if any, in the ordnance impact area, maneuver training areas, and fixed ranges. The fire danger rating system uses the following three colors to characterize fire conditions at SBMR:

- Green (normal caution). There are no weapons use restrictions.
- Yellow (caution because fires will start easily). For this fire danger period, no tracers, white phosphorus, or illumination rounds are allowed.
- Red (extreme caution because a fire would be difficult to control). Blanks and ball ammunition are allowed only on CR and MF Ranges, and no other live-fire is allowed. No pyrotechnics, smoking, or warming/cooking fires are allowed. Maneuver training is allowed.

There is a high fire danger at SBER because the rugged terrain limits accessibility for fire suppression (USARHAW and 25th ID[L] 2001a, 520 and 564-565). Also, flammable dry grassland areas border much of the native habitat. A number of wildfires have been documented at the range, even though there is no live-fire training. Some of these fires were started by pyrotechnics, such as hand flares or smoke grenades. However, USARHAW no longer allows aerial pyrotechnics (star clusters/parachute flares) or smoke grenades to be used at SBER. SBER depends on the closest responding forces (such as the City and County of Honolulu Fire Department) for first response and immediate Federal Fire Department/Range Control response. One RAWS on SBER aids in determining weather conditions and the threat of wildfires.

Chapter 7 of the IWFMP describes the SBER fire management area (USARHAW and 25th ID[IL] 2003, 7-67). From 1994 to 1998 and 2000 to 2002, a total of 14 fires were reported at SBER, ranging in size from hundredths of a hectare to 4 hectares and totaling 23 acres (9.3 hectares). The most common cause was various types of pyrotechnics. Not enough data is available for a full analysis, but there were no other apparent trends.

Two wildfire areas have been designated, based on the location of the most currently used training areas, and existing roads (USARHAW and 25th ID[IL] 2003, 7-71 and 7-73). Each area was assigned an ignition potential, fuels hazard, and habitat value, based on the best currently available information. As a result, eastern SBER has a low-to-moderate wildfire prevention priority, and western SBER has a moderately high wildfire prevention priority.

Figure 5-47 shows the location of fire management facilities. Fire protection in the fire management area includes firebreaks and fuels modification (USARHAW and 25th ID[IL] 2003, 7-75). There are no firebreaks at SBER, though there are a number of roads that will serve as fire control lines during fire suppression. They will not be kept at firebreak standards and will be maintained only to the extent necessary for vehicle access. The Army will use mechanical crushing, herbicide application, and prescribed burning (where applicable) whenever possible and necessary. Where it is not possible to crush fuel or conduct prescribed burns, the Army will consider clearing select areas and removing fuel by hand. No fuels management is planned at this time.

Schofield Barracks Range Control is responsible for retrieving weather data from the RAWS located at ER-3B (USARHAW and 25th ID[IL] 2003, SBER-10 and SBER-26). The burn index, as determined by the fire danger rating system, will be used to rank fire danger to determine restrictions on pyrotechnic use, if any, in the maneuver training areas or fixed training areas. Using the fire danger rating system, green and red characterize the fire conditions at SBER.

Chapter 7 of the IWFMP describes the SRAA fire management area (USARHAW and 25th ID[IL] 2003, 7-93). USARHAW does not own the SRAA, so no military ignited fires have occurred there. Agricultural burning has been practiced here in the past, but no fire records are available.

Fire protection in the fire management area includes firebreaks and fuels modification (USARHAW and 25th ID[IL] 2003, 7-96). According to the IWFMP, one firebreak is planned for SRAA. There are also a number of existing roads that will serve as firebreaks during fire suppression. They will not be kept at firebreak standards and will be maintained only to the extent necessary for vehicle access. The Army will use mechanical crushing, herbicide application, and prescribed burning (where applicable) whenever possible and necessary. Where it is not possible to crush fuel or conduct prescribed burns, the Army will consider clearing select areas and removing fuel by hand.

[Figure 5-47](#)

Fire Management Facilities at Schofield Barracks East Range

Figure 5-46 shows the location of proposed fire management facilities. There is no RAWs at SRAA. Schofield Barracks Range Control is responsible for retrieving weather data from a RAWs (USARHAW and 25th ID[L] 2003, SRAA-5). The burn index, as determined by the fire danger rating system is used to rank fire danger to determine restrictions on pyrotechnic use, if any, in the maneuver training areas, and/or fixed training courses at SRAA. Using the fire danger rating system, green and red characterize the fire conditions at SBER.

WAAF is in a developed area between Kunia Road and Kamehameha Highway. Little vegetation in the project area could be involved in a wildland fire. WAAF has a two-company fire house, crash-fire-rescue vehicles, conventional pumpers, and one field firefighting vehicle (Belt Collins 1994, 4-91). Fire companies posted at SBMR can augment firefighting support at WAAF.

Helemanō Trail would be north of Wahiawā and would use as much of the existing agriculture roadways as possible. With the exception of a wooded area around Wilson Lake, much of the trail would be on relatively flat terrain and clear of dense vegetation capable of being consumed by a wildfire.

5.12.2 Environmental Consequences

Summary of Impacts

This section discusses potential human health and safety hazard impacts of implementing the Proposed Action and alternatives at SBMR and WAAF. Significant impacts mitigable to less than significant that would occur under the Proposed Action and RLA Alternative are as follows:

- Due to a 25 percent increase in munitions under these alternatives and the results of recent soil analyses on SBMR, ammunition presents a significant contamination risk to range soils. Remedial cleanup would take place when training areas are permanently closed.
- Potential UXO exposure during maneuvers and construction activities creates a significant threat to workers and Army personnel.
- Construction and demolition at SBMR could expose workers to lead-based paint or lead-containing construction materials, creating a significant health and safety risk. In addition, construction of the BAX and UACTF would involve movement of soils that could release lead to the environment, creating a significant impact.
- Construction and demolition at SBMR could expose workers to asbestos-containing materials, which could be a significant health and safety risk.
- The addition of four live-fire ranges under the Proposed Action and three ranges under the RLA Alternative, as well as a higher level of live-fire training at SBMR, would present a significant wildfire risk.

All other human health and safety hazard issues were considered as having either a less than significant impact or no impact at all. Impacts, methodology, and factors determining significance are discussed in Section 4.12.1. Table 5-34 summarizes the potential human health and safety hazard impacts that have been identified in this analysis. As discussed in Section 5.12.1, no ordnance impact areas are being introduced to this installation.

Table 5-34
Summary of Potential Human Health and Safety Hazard Impacts at SBMR/WAAF

Impact Issues	Proposed Action	Reduced Land Acquisition	No Action
Hazardous materials management	⊙	⊙	○
Hazardous waste management	⊙	⊙	○
Ammunition	⊗	⊗	⊙
Unexploded ordnance	⊗	⊗	⊙
General training	⊙	⊙	⊙
Installation restoration program sites	⊗	⊗	○
Lead	⊗	⊗	⊙
Asbestos	⊗	⊗	○
Polychlorinated biphenyls	○	○	○
Electromagnetic fields	⊙	⊙	⊙
Petroleum, oils, and lubricants	⊙	⊙	○
Pesticides/Herbicides	⊙	⊙	○
Biomedical waste	⊙	⊙	○
Radon	○	○	○
Wildfires	⊗	⊗	⊙

In cases when there would be both beneficial and adverse impacts, both are shown on this table. Mitigation measures would only apply to adverse impacts.

LEGEND:

⊗ = Significant	+	= Beneficial impact
⊗ = Significant but mitigable to less than significant	N/A	= Not applicable
⊙ = Less than significant		
○ = No impact		

Proposed Action (Preferred Alternative)

Significant Impacts Mitigable to Less than Significant

Impact 1: Ammunition. Recent range studies at SBMR have revealed elevated levels of munition byproducts, such as lead and RDX, above USEPA Region IX residential and industrial PRGs at each installation (the investigation report is included in Appendix M1), which indicates that additional risk based investigations may need to be conducted. Sections 5.8, Water Resources, and 5.9, Geology, Soils, and Seismology, provide more detailed analyses of specific effects on surface water and soils. As defined in the Military Munitions Rule, ammunition used for its intended purpose on military ranges is not considered a regulated hazardous material. This material, however, may be an environmental hazard and is

therefore considered significant. In addition, under the Proposed Action, the quantity of ammunition rounds fired during Army training on all Army training ranges in Hawai'i would increase from 16 million to 20 million rounds per year, a 25 percent increase, primarily consisting of small arms munitions (97 percent of the total increase). The proposed increased level of training could elevate contamination levels in range soils by 25 percent over the contamination generated by current force training. However, the analysis showed that where the contamination occurs, it is not running off the site. In addition, the Soldiers will not be conducting foot maneuvers in this area and will not be exposed to the contaminants. Only government personnel or government contractors specifically trained and certified to travel safely in the ordnance impact area will regularly access the contaminated areas.

Management of the increased quantity of ammunition and other ammunition-related issues associated with SBMR are discussed under less than significant impacts. The mitigation measures below will reduce the impact of ammunition to less than significant levels.

Regulatory and Administrative Mitigation 1. All government personnel or government contractors accessing ordnance impact areas will continue to follow OSHA and Army standards and guidelines to minimize health and safety impacts from exposure to any contaminants or ordnance. The general public will be allowed in or near ordnance impact areas only at times and in group sizes approved by USARHAW Command. Army trained and certified personnel would escort the general public at all times. Access is limited to only those areas deemed safe by USARHAW Range Control.

The Army will undertake additional risk based investigations as appropriate in the event any active range is closed and transferred out of DoD control. Based on the results of this health risk-based analysis, all remediation necessary to mitigate an imminent threat to human health and the environment would be undertaken at such time.

Additional Mitigation 1. No additional mitigation has been identified.

Impact 2: Unexploded ordnance. Of the 25 percent increase in ammunition under the Proposed Action, only 1.3 percent of the total increase would be from UXO-producing munitions (mortars, artillery, and grenades). UXO could affect the construction of the proposed BAX and UACTF. Construction would involve moving soils potentially contaminated with UXO from prior activities in the range impact area. The presence of UXO within the construction area could potentially lead to a significant safety impact. Additionally, training operations at the BAX and UACTF could potentially contaminate the range with UXO, creating a safety risk to personnel. In addition to the below mitigation measures, the Army would continue to educate Soldiers on identifying UXO and proper safety procedures for handling UXO, as explained in Chapter 3, Section 3.12. The mitigation measures below will reduce the significant impact to less than significant.

Regulatory and Administrative Mitigation 2. Before construction begins, the Army will employ qualified personnel to conduct a UXO survey of the proposed construction area. If the risk of encountering UXO is low, then UXO construction support will be used. If the risk of encountering UXO is high, then UXO will be cleared to ensure the site safety. The Army will

document UXO surveys and removal actions in full accordance with applicable laws, regulations, and guidance. The Army will clear UXO if rounds are fired outside of designated ordnance impact areas or present an immediate threat to human health or safety.

Additional Mitigation 2. No additional mitigations have been proposed.

Impact 3: Installation restoration program sites. Construction and operational activities associated with the Proposed Action would not affect the IRP, with the exception of the TCE monitoring program on WAAF. The proposed Multiple Deployment Facility at WAAF is sited in the area of TCE monitoring well MW 2-3. This well (as seen in Figure K-5-2) is used for long-term monitoring of the TCE plume under SBMR and WAAF. Even though the plume has diminished in size, long-term monitoring continues as part of the IRP. The mitigation measures below will reduce the significant impact to less than significant.

Regulatory and Administrative Mitigation 3. No mitigation measures were identified.

Additional Mitigation 3. The Army proposes to build the WAAF facility to incorporate an existing monitoring well into the design, as long as construction does not affect the well by either contaminating, destroying, permanently sealing or otherwise preventing future well sampling. Technicians would have access to this well in order to continue the monitoring program. As the well currently exists within the apron/runway vicinity, the location is not believed to be a significant hindrance because the wellhead could be flush-mounted in the apron surface, similar to those at civilian gasoline service stations.

Impact 4: Lead. Construction activities associated with the Proposed Action could involve lead exposure to workers at SBMR. The workers could be exposed to LBP and pipes during demolition or grading at specific project sites within the installation. There are eight buildings proposed to be demolished for the construction of the Range Control Facility at Schofield Barracks: 1124, 1125, 1150, 1181, 1192, 2108, 2056, and 2276. Only two of these buildings have been surveyed for the presence of lead (Buildings 1150 and 2108). Lead was found in Building 2108. Implementing the mitigation below would reduce the impacts to less than significant.

Additionally, the construction of the QTR1, BAX, and UACTF would redistribute material from the berms onto retained firing range berms. In this manner, the material would be readily available for re-establishment of the berms at a future point to be determined. The berms used to stop projectiles fired at the ranges are expected to contain significant quantities of lead and potentially UXO. Recent soil studies of the SBMR ranges confirmed elevated levels of lead in the soils, above EPA Region IX residential and industrial PRGs (see Appendix M1 for the investigation report). The presence of lead may cause additional soils to become contaminated due to vehicle and equipment movement and soil erosion. Additional contamination would increase the volume of soil that needs to be remediated in the future. The mitigation measures below will reduce the significant impact to less than significant.

Regulatory and Administrative Mitigation 4. The Army will expand existing programs for LBP to any SBCT-related activities that would affect older structures that had the potential use of LBP throughout the installations. Lead is managed in place for existing structures. In the event of demolition or renovation projects affecting such structures, a survey is required prior to demolition/renovation and appropriate actions must be taken to prevent the release of these substances into the environment. Construction workers must be properly trained/certified to handle these materials and any debris must be tested by TCLP and disposed of according to the results. The Army will retain lead-contaminated soils from existing berms on-site and will use the soils in the construction of new berms associated with the UACTF. If lead-contaminated soils were not reused at the site for new berm construction, the soils would be remediated for lead, in accordance with applicable federal and state standards.

Additional Mitigation 4. No additional mitigations have been proposed.

Impact 5: Asbestos exposure. Construction activities associated with the Proposed Action could involve the exposure of workers to friable asbestos at the project sites. The workers could be exposed to asbestos during demolition or grading. Each of the buildings proposed for demolition as part of the Range Control Facility project under the Proposed Action have been surveyed for ACM, with the exception of Buildings 1181 and 1192. Buildings 1150, 2108, and 2056 contain ACM. ACM was banned from manufacturing in the 1970s; therefore, no ACM would be used as building material during construction or during SBCT operations. There would be no significant impacts from asbestos, nor would mitigation be required when using construction materials. The mitigation measures below will reduce the significant impact to less than significant.

Regulatory and Administrative Mitigation 5. The Army will expand existing programs for asbestos throughout the installations to any SBCT-related activities that would affect older structures that could have been built using asbestos. Asbestos is managed in place for existing structures. In the event of demolition or renovation, a survey is required prior to demolition/renovation and appropriate actions must be taken to prevent the release of asbestos into the environment. Construction workers must be properly trained/certified to handle these materials and any debris must be tested by TCLP and disposed of according to the results.

Additional Mitigation 5. No additional mitigations have been proposed.

Impact 6: Wildfires. Following the establishment of Helemanō Trail, units would transport materials and equipment via military vehicles. Transportation of personnel and use of flammable or combustible materials such as fuel or ordnance (i.e., weaponry or equipment) could increase the potential for starting a wildfire, especially in areas not previously used frequently. However, the IWFMP does not address fire management actions for Helemanō Trail. The use of the trail by the Army would increase potential sources of wildfire ignition from Army training in areas that don't have established fire management actions, such as fire prevention and fire suppression. Unlike training activities conducted on installations, the trail would not always be near an installation where access to Army fire suppression resources

would be readily available. A wildfire could damage animal and plant communities, damage cultural resources, and contribute to soil erosion by removing vegetation. This mitigation would reduce wildfire impacts to less than significant.

Regulatory and Administrative Mitigation 6. The IWFMP for Pōhakuloa and O'ahu Training Areas was updated in October 2003. The Army will fully implement this plan for all existing and new training areas to reduce the impacts from wildland fires. Public and firefighter safety is the first priority in every fire management activity. The plan considers the potential need for firebreaks and/or fuel breaks at each installation, along with other safety concerns. The plan is available upon request.

Less Than Significant Impacts

Hazardous materials management. The Proposed Action would not significantly increase hazardous materials use at SBMR. Short-term impacts would be associated with construction activities at the project sites. Construction-related activities would require the use of hazardous materials in excess of existing quantities. However, contract specifications control the purchase amount, use, and storage of hazardous materials and require compliance with federal, state, and local requirements and with installation policy on hazardous materials.

A new chemical would be used in conjunction with the proposed Stryker training as part of the JBPDS. A sodium azide (NaN_3) solution is used to preserve suspected biological agent samples during combat maneuvers. Only simulated biological agents will be used during training in Hawai'i. Between one and two liters of sodium azide would be contained within plastic bottles and carried in each Stryker. Although sodium azide is considered toxic in its pure form (Dako 1997), the sodium azide solution to be used would be 0.5 percent sodium azide and 95.5 percent water. Only trained personnel would handle this material. As the Strykers would be maintained at SBMR, this material would be managed at this location.

The US Army follows strict SOPs for storing and using hazardous materials. Therefore, no new procedures would need to be implemented to store or use the construction-related hazardous materials. The additional quantities of hazardous materials would be removed at the completion of construction. Hazardous materials would be handled in accordance with existing regulations and installation-wide protocol for hazardous materials management. The increased amount of hazardous materials due to operations of the proposed Motor Pool facility (combined with a Hazardous Material Storage Facility) would result in an increased throughput in the Hazardous Materials Control Center (HMCC) located on SBER. USAG-HI has a model facility, however, and would be able to handle the increased hazardous materials throughput. The increase is not significant. In addition, the Army conducts routine inspections of all facilities containing hazardous materials to ensure compliance. Hazardous materials would not pose a significant impact, and mitigation would not be necessary.

Although the proposed Helemanō Trail would be composed primarily of gravel, road grades steeper than 10 percent would be paved with asphalt or concrete to ensure safety in all weather conditions. (Details on these materials are summarized in Chapter 4.) These materials would also be used in manufacturing supporting appurtenances, such as guardrails and signs. These projects are depicted on Figures 2-8 and 2-15.

Hazardous waste management. Activities related to the Proposed Action would not significantly affect hazardous waste management on SBMR. Construction of facilities may result in temporary generation of small amounts of hazardous waste (e.g., POLs and universal waste such as batteries and spent fluorescent bulbs). Operational activities associated with the Proposed Action would not significantly affect hazardous waste management on SBMR.

As previously mentioned, a new waste stream will be introduced with the Stryker vehicles and will be managed through SBMR. Sodium azide is used in the Stryker vehicles to preserve suspected biological agent samples during combat maneuvers. Only trained personnel would handle this solution, but spills are always a possibility. Proper containment is practiced to prevent release to the environment. Following analysis, the waste solution would be disposed of in accordance with RCRA regulations. Per Federal regulations, sodium azide and compounds containing the product are classified as P105 wastes and would be disposed of using this classification as per 40 CFR 261.33. This is not considered a significant impact as increased regulatory requirements would not be instated. Other “off-specification” commercial chemicals, such as mercury, benzene, and chemicals within pesticides, are currently disposed of through the same federally regulated practices through USAG-HI.

USAG-HI has an installation-wide program for hazardous waste management and disposal using the 90-day TAP facility. The SBCT would be required to manage and dispose of hazardous waste generated by operations through DRMO in accordance with regulations and installation-wide protocol regarding storage, use, and disposal. Hazardous waste associated with construction activities would cease being generated at the completion of construction. The additional hazardous waste generated on SBMR by the Proposed Action would not result in a significant increase to the total amount of hazardous waste generated, managed, and disposed from the installation. Therefore, there would be no significant construction-related or operational impacts, and no mitigation would be required.

Ammunition. Four live-fire ranges are to be built at SBMR under the Proposed Action. The projects are as follows:

- A standard QTR1 would be constructed on McCarthy Flats on SBMR. The range complex would include 12 lanes of combat pistol and Military Police qualification targets, 24 lanes of rifle modified record fire lanes with 12 multipurpose machine gun/sniper lanes, and 50 lanes of basic 10/25 mortar firing range.
- A new QTR2 with a total of 22 firing points would be constructed under the Proposed Action within the proposed SRAA. Ten lanes would be used for modified record fire and 12 lanes would be used for a standard automated Combat Pistol Qualification Course.
- A BAX designed for company gunnery training and qualification requirements of weapons systems of the proposed SBCT is projected to be constructed on the west side of Beaver Road and north of Trimble Road on the pre-existing range complex and range impact area, as illustrated on Figures 2-8 and 2-10. The range would support dismounted Infantry Platoon tactical live-fire operations with or without supporting vehicles.

- The UACTF would replace the MOUT Assault Course on the Kolekole Ranges.

Proposed construction of these ranges would result in an increased use of ammunition at these sites and an introduction of live-fire training to the SRAA site.

The numbers of other weapon systems would also increase with the elevated level of training proposed in the transformation. Although the Proposed Action would generate a significant increase of ammunition use (an additional 4 million rounds) due to the elevated level of training and expansion in military force, management of artillery and ammunition would not change. Two new types of weapon would be introduced to the ranges at SBMR as a result of transformation, the 105mm cannon on the MGS and the 120mm mortar. Handling and storage methods, disposal protocols, and safety procedures would continue to be conducted in accordance with existing regulations. No new conventions would need to be instated. The increase in ammunition, introduction of the 105mm and 120mm weapon systems, and construction of these four ranges under the Proposed Action is not expected to generate a significant impact.

Environmental mitigation and UXO cleanup is required at these ranges and would be separately funded by Operation and Maintenance, Army (OMA) prior to the start of construction. The one exception is QTR2, which is projected to be constructed on newly acquired land and therefore does not require clearance.

The Army proposes to construct the Range Control Facility within the cantonment area on Beaver Road, as shown on Figures 2-9 and 2-11. This facility would provide a consolidated command and control facility to monitor and coordinate all range activities and operations, including ammunition use, at all Army training areas on O'ahu. The Army follows strict SOPs when handling ordnance. Ammunition to be used during training is brought to the range with the unit and stored in temporary AHAs. The disposal of ordnance is regulated by RCRA as explained in Chapter 3, Section 3.12, of this document. Excess ordnance not used during training is either brought back with the unit to be stored at the permanent ASP on WAAF or manually burned at the site. Residues from the manual burn activity are stored in hazardous waste receptacles and brought to the 90-day temporary TAP facility for disposal by DRMO. Additionally, the Army conducts routine inspections of all facilities containing hazardous materials to ensure compliance. Therefore, there would be no significant impacts from ammunition, and no mitigation would be required.

Range sampling and contamination impacts are discussed under the Significant Impact section, above.

General training. Transformation activities relevant to this class or type of activity include military training on training lands outside of developed (e.g., cantonment) areas. Such training would include non live-fire training, mounted maneuver training, and other non live-fire dismounted military training. A slight increase in transformed live-fire training would occur on existing ranges. The increase would be maintained and managed by existing administration in accordance with federal and Army protocol, therefore creating no additional significant impact.

As further explained in Chapter 4, Section 4.12, in order to protect the public during range training, SDZs have been and would be included in the range design, in accordance with Army Pamphlet 385-64, *Ammunition and Explosive Safety Standards*. Additionally, in order to protect Army personnel during range training, Soldiers and officers are given safety manuals, operation-specific field manuals, and range-specific briefings prior to the training, with a complete discussion of safety procedures while training.

General SBCT training issues associated with the QTR1, QTR2, BAX, UACTF, and the SRAA would not likely result in any significant impacts. These training activities may expose additional areas to potential leaks, spills, or drips from military training equipment. USARHAW would, during any on-site operational activities within a specific project area, implement standard operating procedures to minimize the potential for spills or other harm to the environment. Therefore, there would be no significant impacts from training operations, and no mitigation would be required.

Installation Restoration Programs sites. The SRAA is part of the EPA-designated Del Monte Superfund Site. This Superfund investigation originated at the Del Monte well in the town of Kunia (south of SBMR, and south of the SRAA). The Del Monte farmland parcel just south of SBMR (north of Kunia Village) is included in the Superfund study (Figure 5-45). The site includes former USTs and buried drums of chemicals, such as methyl bromide (USEPA 2003), although no chemicals were detected at levels considered to be a threat to human health or the environment or that require cleanup (Rosati 2003). Under an agreement with the EPA, Del Monte conducted a remedial investigation, a baseline human health risk assessment, and addendum to the remedial investigation report, and a phytoremediation treatability study. Based on the results of these studies, the EPA issued a ROD in September 2003, establishing specific remedial actions to rectify the Superfund site. The Army's proposed acquisition of SRAA would in no way interfere with the progress of Del Monte remedial programs designated by EPA.

The parcel just north of SBMR (Poamoho Village), to be acquired under the Proposed Action as part of the development of Helemanō Trail, was previously included in the Superfund listing but was removed in January 2004, following several rounds of investigations resulting in confirmation that the site did not pose a threat to human health or the environment. For these reasons, the proposed acquisition areas are not considered significantly affected by the ongoing Superfund remedial programs.

Electromagnetic fields. Two of the proposed project actions could potentially introduce EMF to SBMR, the VFTF and the FTI. Each of these facilities would consist of communications and radar transmitters. In the VFTF, the equipment would be contained within a control room. The FTI is a group of antennas, similar to cellular phone towers, strategically placed throughout the installation and training areas, whereby radios within military vehicles would be able to receive communication signals to process both voice and data. The antennas would be located at current antenna sites when possible. Two of the FTI sites would be just outside the boundary of the installation.

The general public is typically not allowed in areas that could contain EMF hazards from Army equipment and, therefore, would not be inadvertently exposed to EMF. FFI sites would be appropriately fenced to prevent trespassing and exposure to any harmful EMF. Signs would be posted around the perimeter of all potentially harmful EMF sources to warn people about the EMF source. DOD Instruction 6055.11 and Army Pamphlet 385-64, as well as other Army regulations pertaining to EMF, would be followed in the operation of the new facilities to protect personnel, as is the current practice. Only trained personnel would work with equipment emitting EMF. There would be no significant impact to the public from exposure to EMF, and no mitigation would be necessary.

Petroleum, oils and lubricants. Several projects included in the Proposed Action would pose less than significant POL impacts on SBMR. Each project is discussed in detail in Appendix D. The projects are as follows:

- The Tactical Vehicle Wash facility is designed to accommodate an 18.3-meter-long by 3.7-meter-wide vehicle and would have four wash stations. Treatment would include oil and grease removal, grit removal, and organic control. An OWS would be provided to treat any residual water that did not go through the main system. Waste oil would be skimmed from the surface of the OWS on a regular basis, properly containerized and labeled, and disposed of through DRMO;
- The Multiple Deployment Facility would be constructed at WAAF to support deployments from multiple airfields. This facility would include a 6,000-square-foot vehicle maintenance facility, a de-fueling facility, a 2,479 square foot vehicle holding area, and a wash rack connected to an OWS to remove any residual oils from the wastewater;
- The apron upgrade at WAAF would require the use of petroleum asphalt. According to the material safety data sheet (MSDS) filed under the OSHA 29 CFR 1910.1200, incomplete combustion can yield carbon monoxide and oxides of sulfur and nitrogen and various hydrocarbons. Although no association has been established between industrial exposure to petroleum asphalt and cancer in humans (Quikrete 2002a), skin contact and breathing of mists, fumes, and vapor should still be avoided by the construction team. This project would be sited on the existing apron on the west side of WAAF just north of Airdrome Road, as shown on Figures 2-9 and D-7; and
- The Motor Pool facility (combined with a Hazardous Material Storage Facility) on the SRAA is designed to accommodate an increase of 400 vehicles. Motor pool infrastructure relevant to this section would include petroleum, oil, and lubricant facilities, OWSs, and hardstand and organizational vehicle parking areas. The waste oil from the OWSs would be skimmed regularly, as is consistent with existing protocol, for proper disposal by DRMO.

Increases in POL storage, use, and handling demands directly related to transformation activities do not include the increased number of Soldiers' privately owned vehicles (POVs), which would not use the project motor pool. POVs would continue to use the on-base AAFES fueling facilities discussed in Section 5.12.1 for fueling and maintenance. These

facilities are designed to withstand the increase POL needs. The existing USTs would be refueled as needed to support the increased population needs. No new tanks would be installed.

Construction activities would not be likely to result in any specific impacts. These construction activities may expose additional areas to potential, construction equipment leaks, spills, or drips, this would be a less than significant, short-term adverse impact.

Per SOPs, USARHAW would, during any on-site construction activities within a specific project area, undertake the following measures to minimize the potential for spills or other harm to the environment:

- Implement applicable spill response and contingency plans following any release to the environment. This includes reporting spills to the appropriate local, state, and federal government agencies as required based on the type and volume of the release;
- Refuel construction equipment on relatively flat, paved surfaces when possible. Refueling activities would be conducted during periods when no precipitation is falling. Secondary containment would surround the transfer area to prevent an accidental release from leaving the immediate area. Transfers would not be conducted near navigable bodies of water, including storm sewer inlets, unless necessary; and
- Maintain construction equipment to prevent drips or leaks from hoses or reservoirs, which contain hazardous materials or waste.

No storage tanks are located within the project areas and no new storage tanks would be installed as a result of the Proposed Action. Operations at these facilities would practice best management practices and follow USEPA and USAG-HI protocol for use and handling of hazardous materials such as POLs. DPW maintains a spill contingency plan and an SOP plan that outline proper operating and emergency response procedures and responsibilities. Additionally, the Army conducts routine inspections of all facilities containing hazardous materials to ensure compliance. Therefore, there would be no significant impacts from POLs, and no mitigation would be required.

Although Helemanō Trail would be composed primarily of gravel, road grades steeper than ten percent would be paved with petroleum asphalt or concrete. These materials would also be used to install appurtenances, such as guardrails and signs. Although OSHA does not categorize petroleum asphalt as carcinogenic to humans, serious health problems can result from extended exposure. The construction team would avoid coming into skin contact with and breathing mists, fumes, or vapors. Construction and disposal would be conducted in accordance with federal, state, and local regulations.

Pesticides/Herbicides. QTR2 would be constructed on existing agricultural fields within the proposed SRAA where past pesticides have been used. The total acreage of the SRAA is approximately 1,400 acres (567 hectares). As this would be newly acquired land, pest control

on the land would be maintained by DPW in accordance with the USAG-HI IPMP. Pesticide products would continue to be stored at the centralized Pest Control Shop located on SBMR. Therefore, there would be no significant impacts from pesticides, and no mitigation would be required.

No Impacts

Polychlorinated biphenyls. Construction and operational activities associated with the Proposed Action would not generate impacts from PCBs. The Army has been committed to removing or retrofitting all electrical equipment containing regulated amounts of PCBs. If PCBs are encountered, the devices would be properly handled in accordance with USEPA regulations. As per subsection 6(e) of the TSCA of 1976, no new PCB-containing equipment would be installed as part of this alternative. Therefore, there would be no impacts, and no mitigation would be required.

Reduced Land Acquisition Alternative

All of the impacts and mitigation identified above for the Proposed Action would be the same for RLA, except for those pertaining to hazardous materials and waste management, UXO, general training, and pesticides. Therefore, only these impacts are addressed below.

Significant Impact Mitigable to Less than Significant

Unexploded ordnance. As this alternative relocates QTR2 from SRLA to PTA, live-fire training would not take place on SRAA. As no live-fire training would be introduced, the potential for UXO in the SRAA area would be eliminated. The potential for UXO in other training areas, as discussed under Proposed Action remains, however, and the impacts from UXO remain significant but mitigable to less than significant with the aforementioned mitigation measures.

Less than Significant Impacts

Other human health and safety hazard impacts associated with Reduced Land Acquisition would be largely improved at SBMR, as compared to the Proposed Action, due to the decreased impacts of ammunition, training, herbicides, and construction-related materials and waste management on the SRAA. These improvements do not change the significance impact level, however, as other projects on SBMR present less than significant (and significant but mitigable in the case of UXO) impacts. These issues are listed below:

Hazardous materials management. Hazardous materials management at SBMR overall would decrease, as materials need for training and upkeep of QTR2 would be eliminated.

Hazardous waste management. Hazardous wastes management at SBMR overall would decrease, as wastes generated from training and maintenance of QTR2 would be eliminated.

General training. Under Reduced Land Acquisition, the SRAA would only consist of 100 acres (40.5 hectares) for placement of the motor pool, as compared to 1,400 (567 hectares) acres under the preferred alternative. The QTR2 range would be set at PTA and live-fire training would not take place on SBSR. Furthermore, as there would be no training areas located in

the SRAA, the potential for military training equipment leaks, spills, or drips to the environment would be eliminated.

Pesticides/Herbicides. The Reduced Land Acquisition Alternative reduces the land to be acquired from 1,400 acres (567 hectares) to 100 acres (40.5 hectares). This reduction consequently reduces the amount of pesticides used on SBMR as pest management would not be needed on the SRAA, with the exception of minimal pest control around the proposed motor pool to be set on the subject 100 acres (40.5 hectares) to be acquired.

No Action Alternative

The current baseline of impact conditions would continue under No Action. No increase in hazardous material use or waste generation would occur. Seven less than significant impacts under No Action would primarily be due to continued practices at existing levels: ammunition, UXO, general training, lead, EMF, and wildfires.

Training Related Impacts. As training would continue by current forces on SBMR, impacts from the training and munitions use would continue to effect the land. Existing types and quantities of ammunition and ordnance would continue to be used. The 105mm cannon and the 120mm mortar would not be used. As UXO would remain a potential presence, EOD specialists would continue to implement abatement procedures to minimize potential exposure of current forces to UXO during training. USARHAW would continue following existing SOPs to minimize the potential for spills or other harm to the environment resulting from training efforts. Current forces would continue to train on SBMR, which would distribute lead and other contaminants resulting from training from small ammunition firearms into retained firing range berms. The presence of these contaminants may further contaminate soils due to vehicle and equipment movement and soil deposition. Finally, continued use of Army land for training under No Action would prolong the threat of wildfires. The WFMP and its FMAs and wildland fire SOPs, all of which are designed to prevent and manage wildfires, would continue to be followed. These impacts from continued training at existing levels would remain a less than significant impact, and no new mitigation would be required.

Electromagnetic Fields. EMF sources would not be introduced to the installation or areas outside the installation under No Action, but existing sources of electromagnetic radiation as well as future projects containing EMF would remain a risk. SOPs would continue to be followed in order to prevent exposure to the public or the environment.